

## 1、SCOPE

This specification governs the performance of the following Nickel-Cadmium Cylindrical cell and its stack-up batteries.

Model: CD- F7000

Cell Size: F (  $\phi 32.3^{\pm 0.2} \times 89.2^{\pm 0.5}$  )

## 2 、 DATA OF STACK UP BATTERIES

All data involves voltage and weight to stack-up battery are equal to the value of unit cell time the number of unit cell which consisted in the stack-up batteries

Example : Stack-up batteries consisting three unit cells

Nominal voltage of unit cell=1.2V

Nominal voltage of stack-up batteries =1.2V×3=3.6V

## 3、 RATINGS

Description	Unit	Specification	Conditions
Nominal Voltage	V/Cell	1.2	Unit cell
Nominal Capacity	mAh	7000	Standard Charge/Discharge
Standard Charge	mA	700(0.1C)	T <sub>1</sub> =0~50°C(see Note1)
	Hour	14~16	
Quick Charge	mA	1500	- Δ V=0~10mV/cell or Timer Cutoff=120% nominal capacity or Temp.Cutoff=55°C, T <sub>1</sub> =10~50°C
	Hour	5.6approx (see Note 2)	
Trickle Charge	mA	(0.05C)~(0.1C)	T <sub>1</sub> =0~50°C
Standard discharge	mA	1400 (0.2C)	T <sub>1</sub> = -30~60°C Humidity: Max.85%
Discharge Cut-off Voltage	V/cell	1.0	
Storage Temperature	°C	-30~65	Discharged state、 Humidity、 Max.85%
Typical Weight	Gram	185	unit cell

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## 4、 PERFORMANCE

Unless otherwise stated, tests should be done within one month of delivery under the following conditions:

Ambient Temperature :  $20 \pm 5^{\circ}\text{C}$

Relative Humidity :  $65 \pm 20\%$

Notes: Standard Charge/Discharge Conditions:

Charge: 700mA(0.1C)×14 hours

Discharge: 1400 mA(0.2C) to 1.0V/cell

Test	Unit	Specification	Conditions	Remarks
Capacity	mAh	$\geq 7000$	Standard Charge Discharge	up to 3 cycles are allowed
Open Circuit Voltage(OCV)	V/cell	$\geq 1.25$	Within 1 hour after standard Charge	
Internal Impedance	mΩ /cell	$\leq 7.0$	Upon fully charge(1KHz)	
High Rate Discharge(1C)	minute	$\geq 54$	Standard Charge, 1 hour rest Before discharge by 7000mA (1C)to 1.0V/cell	up to 3 cycles are allowed
Overcharge	/	No leakage nor explosion	700mA(0.1C)Charge 28 days	
Charge Retention	mAh	$\geq 5250(70\%)$	Standard Charge, Storage: 28 days, Standard Discharge	
IEC Cycle Life	Cycle	$\geq 500$	IEC285(1993)4.4.1	(see Note 3)
Accelerated Cycle Life	Cycle	$\geq 400$	Charge:1500mA Discharge: 3500mA(0.5C) To 1.0V/cell, End-of:80% nominal Capacity	Cycling charging cut-off condition: - $\Delta$ V=0~10mV/cell and Timer cut-off=110% Nominal capacity Input and Temp.cutoff=55°C
Leakage		No leakage nor deformation	Fully charged at :1500mA for 5.6 hrs Stand for 14 days	
Vibration Resistance		Change of voltage should be under 0.02V/cell,Change of impedance should be under 5 milli-ohm/cell	Charge the battery 0.1C 14hrs,then leave for 24hrs,check Battery before/after vibration, Amplitude 1.5mm Vibration 3000 CPM Any direction for 60mins.	
Impact Resistance		Change of voltage sho-uld be under 0.02V/cell Change of impedance should be under 5 milli-ohm/cell	Charge the battery 0.1C 14hrs Then leave for 24hrs,check bat-before/after dropped, Height 50cm Wooden board(thickness 30mm) Direction not specified,3 times.	

**5、 CONFIGURATION, DIMENSIONS AND MARKINGS**

Please refer to the attached drawing.

**6、 EXTERNAL APPEARANCE**

The cell/battery shall be free from cracks, scars, breakage, rust, discoloration, leakage nor deformation.

**7、 WARRANTY**

One year limited warranty against workmanship and material defects.

**8、 CAUTION**

- (1) Reverse charging is not acceptable.
- (2) Charge before use. The cells/batteries are delivered in an uncharged state.
- (3) Do not charge/discharge with more than our specified current.
- (4) Do not short circuit the cell/battery Permanent damage to the cell/battery may result.
- (5) Do not incinerate or mutilate the cell/battery.
- (6) Do not solder directly to the cell/battery.
- (7) the life expectancy may be reduced if the cell/battery is subjected adverse conditions like: extreme temperature, deep cycling, excessive overcharge/ over-discharge.
- (8) store the cell/battery uncharged in a cool dry place. Always discharge batteries before bulk storage or shipment.

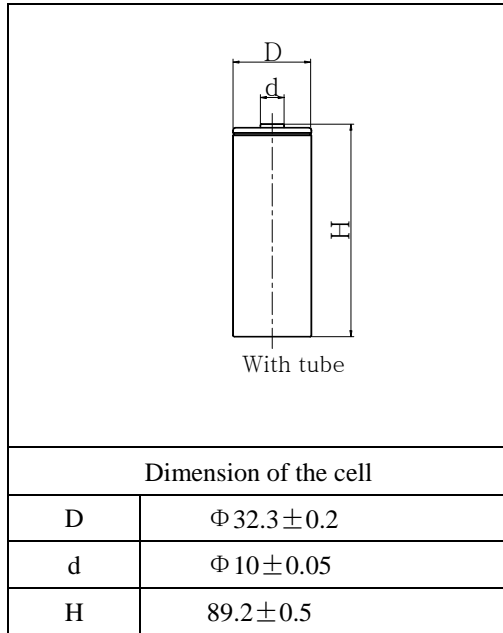
**Notes:**

- (1)  $T_1$ : Ambient Temperature.
- (2) Approximate charge time from discharged state, for reference only.
- (3) IEC285(1993)4.4.1 Cycle Life:

Cycle No.	Charge	Rest	Discharge
1	$0.1C \times 16h$	None	$0.25C \times 2h20min$
2-48	$0.25C \times 3h10min$	None	$0.25C \times 2h20min$
49	$0.25C \times 3h10min$	None	0.25C to 1.0V/cell
50	$0.1C \times 16h$	1-4h	0.2C to 1.0V/cell
Cycles 1 to so shall be repeated until the discharge duration on any 50th Cycle becomes less than 3 h.			

**MODEL No:** CD-F7000

**Description:** 7000mAh F SIZE Ni-Cd



### Specification

Nominal Capacity 额定容量		7000 mAh	
Nominal Voltage 额定电压		1.2 V	
Charge current 充电电流	Standard 标准	700mA	
	Quick 快充	1500mA	
Charge time 充电时间	Standard 标准	14~16 Hrs	
	Quick 快充	5.6 Hrs	
Ambient Temperature 使用温度	Charge 充电	Standard 标准	0°C~50°C
		Quick 快充	10°C~50°C
	Discharge 放电		-30°C~60°C
Storage 储存		-30°C~65°C	
Internal Impedance(mΩ) (After Charge)充电后内阻		Max ≤ 7.0	
Weight 重量		185g	

